CYCLICAL ASPECTS OF EARLY MAORI AGRICULTURE

D. R. SIMMONS

AUCKLAND INSTITUTE AND MUSEUM

Abstract. A description of some aspects of Maori agriculture of the late 18th and first half of the 19th Centuries using Maori and European sources, is presented.

This paper is intended as an attempt at ethnohistoric reporting. To a certain extent because of the nature of the evidence it must also involve some reconstruction. Late prehistoric and early protohistoric agricultural practices were recorded in the 18th and 19th Centuries by European travellers, very few of whom were in the country long enough to see the seasonal cycle of activities in any one place. We can infer such from later knowledge and thus fit the earlier reports into a reconstructed cycle. This paper does not attempt to present a complete description of a reconstructed cycle for any one region but gathers information which may help in defining such cycles. Maori sources rarely refer to such mundane activities in detail, the emphasis being placed quite naturally on the religious observances and cautionary tales associated with agriculture. The later missionaries and administrators though, were able to make more extensive observations even though the agricultural pattern had changed somewhat by the time their observations were made. There is a danger inherent in the later observations that material is incorporated in them that is taken to reflect late prehistoric practice yet may be purely post-historic, or reflect the origin of the recorder.

Late 18th Century and early 19th Century observations during the summer period indicate a wide variety of practices in agricultural and associated gathering activities which vary from region to region yet have an underlying pattern in common.

At Anaura Bay on the East Coast, North I, during Cook's First Voyage in 1769 (Beaglehole 1962, 1, p. 417) there were fewer than 100 people living. The houses were dispersed as were the cultivations. Banks (*op. cit.*) estimated that there were between 150 (60.71 ha) and 200 acres (80.94 ha) in cultivation in fields ranging in size from one (0.41 ha) to ten acres (4.05 ha). Monkhouse estimated 100 acres (40.47 ha) (Beaglehole 1968, p. 584). Banks suggested that the size of field depended on the size of family, and his general report (Beaglehole 1962, 2, p. 26) would suggest six (2.5 ha) or seven acres (2.9 ha) per extended family unit. Kumara were planted in neatly arranged hillocks, gourds in hollows, taro (cocos) on flat land. This was in October 1769; the crops had just been planted. The main foods at Anaura and at Tolaga Bay at this time were fern root and fish (Beaglehole 1962, 1, p. 416). In the Bay of Plenty the fortified pa was on a hill with plantations nearby (Beaglehole 1968, p. 191).

At Whitianga on the Coromandel Peninsula, on the Puringa River, Cook and Banks saw a group of people living in the open, with great piles of fresh shell (mainly paua), and also some very old heaps. The people also had large quantities of fern root to take

away with them (Beaglehole 1962, 1, p. 427). In this instance the group involved can be identified. They were Ngati Whanaunga who were normally resident at Whakatiwai and the Clevedon area on the Auckland side of the Hauraki Gulf (White 1888, p. 121). Information recorded from Horeta Te Taniwha before he died in 1853 was (Thomson 1859, p. 158), "Our tribe was living there at the time. We did not live there as our permanent home, but were there according to our custom of living for some time on each of our lands." Te Taniwha as a child remembered his meeting with Cook and kept a nail given by Cook to him as a pendant instead of a tiki. Food given to Cook's men was kumara, fish and fern root. White potatoes given them by Cook were planted at Hunua. They were called parareka because they looked like roots of the horseshoe fern (*Marattia salicina*), a plant cultivated for its long starchy root. It is still a name for one variety of Maori potato in the Hauraki area. The reference by Te Taniwha to kumara being given to Cook is not substantiated by the European sources.

Another reference in the same account by Te Taniwha refers to attacks on the Ngati Te Ata of South Manukau Head and the Ngati Whatua of the Auckland isthmus. The former were fishing for sharks off Puponga Point and drying them near Onehunga; the latter were fishing off Ngahuwera at the foot of Queen Street, also for sharks. Both were engaged in "the summer season of fishing for shark" (White 1888, p. 133). Dried fish supplied the main salt requirements.

When Cook was at Mercury Bay, Coromandel, he also visited the Ngati Hei pa to the north of Whitianga, Wharetaewa, which had half an acre in kumara and gourds (Beaglehole 1962, p. 433). Today, approximately four or five acres of garden can be traced on the ground, but these may be earlier or later in date than those to which Banks referred. It is also very probable that the main cultivation areas of the Ngati Hei of Wharetaewa were on the offshore islands, for example Ohinau, which were part of their territory. Wharetaewa was the pa Cook (Beaglehole 1968, 1, pp. 198-201) described in detail in which there was "an immense quantity of fern roots and dried fish." In the Bay of Islands, North Auckland, where between 40 and 50 acres were seen in gardens, pa were seen but also undefended small villages. One cove on an island (probably Moturua) had a small village and large plantations of kumara, yam and taro (Beaglehole 1962, 1, p. 444).

In the Marlborough Sounds, South I, Motuara Island had a pa (Beaglehole 1968, p. 239). It "contained a good number of people", "a prodigious quantity of drying fish and much fern root". For all the Sounds, Cook says (Beaglehole 1968, p.247) that there were not more than 3-400 people. "They live dispersed along the shore in search of their daily bread, which are fish and fern roots, for they cultivate no part of the lands" (Beaglehole 1968, p. 247).

Cook's and Banks' observations cover only one season, the summer of 1769-1770 from October 9 to February 20. In general in the agricultural areas at this time the crops were planted and people were living on fish and fern root. At Purangi River the people who had come to that locality from a region with an agricultural base, as well as the people of Queen Charlotte, who possibly had no agricultural base, were collecting and drying fish and fern root. It is probable that the Queen Charlotte area was, in fact, a seasonal station for people who had an agricultural base elsewhere, the likely area being Durville Island.

At Anaura Bay, Wharataewa, and Bay of Islands, the people were living in their base agricultural area either because of imminent attack as at Wharetaewa, or because their access to sea resources was close and fruitful. In some cases then, the move to seasonal stations need not have yet taken place. This period in the agricultural cycle involved planting the crop, then living on fish and fern root which often also involved some form of dispersal to coastal areas or along coastal areas. In Wharetaewa pa the people had a large seine net (Beaglehole 1962, 1, p. 444). This net was 73.16 m long and would require a body of people to pull it. The return provided by such a net, where conditions were suitable, i.e. sandy beach, would enable the people to stay in larger groups. It is perhaps significant that Anaura Bay and other bays along that coast are also suitable for seine net fishing where the net is hauled from the shore. Seine nets as reported by Williams (Hamilton 1908, p. 61) from the East Coast could be over a kilometre in length. Anaura Bay, Tolaga Bay and Tokomaru Bay are very suitable for this type of activity. In 1772 Le Roux reported nets up to 183 m in length in the Bay of Islands (Best 1929, p. 10).

Regional variations in the agricultural cycle and associated practices are evident in these early accounts. The local situation, topography and climate are all factors which limit or expand the items chosen from the repertoire of techniques available. That there is an extensive repertoire from which possible choices can be made is also abundantly demonstrated by the early first contact reports. The particular type of response to the demands of the early summer period of the agricultural activity cycle is determined by the local situation, whether political, demographic, topographic, or climatic. The overall similarity is that during this period, when the crops are planted, the food is mainly fern root and fish, large quantities of which are prepared for storage.

A number of factors in the years immediately following the first contacts profoundly changed the nature of the agricultural cycle. Important factors were the presence of Europeans who introduced new crops and the consequent demographic changes which resulted from competition for areas where trade could be carried on with the ships. In particular, account needs to be taken of the introduction of white potatoes, which not only could be harvested in the period between planting and harvesting of kumara, but could be used to open up previously marginal or unfavourable areas to agriculture (Simmons 1969, p. 28; 1975, p. 211). Other changes including the introduction of domestic animals also provide a different perspective from that in the early contact accounts.

On Cook's Second Voyage, and even more so on the Third, the changes set in train by his presence were already being felt. It is interesting to note that the pa on Motuara Island was deserted on the Second Voyage (Beaglehole 1968, p. 172) and there is no mention of it being reoccupied during the many return visits paid to the area. On the Third Voyage it had been repaired but was not occupied (Beaglehole 1968, p. 62, p. 800). In 1820, when Bellingshausen put into Queen Charlotte Sound he found a permanent village of about eighty people on the west end of Motuara. These people had plantations of white potatoes newly dug on the headland of the shore opposite (Debenham 1945, pp. 206-210).

The more detailed accounts of the agricultural cycle of activities belong to the 19th Century.

Methods of cultivating and preparing the ground for kumara are described in an Aupouri account written down for the Rev. Puckey at Kaitaia before 1854 (Shortland MS). These techniques could also apply to potatoes required for early crops from the sheltered environment in a bush garden.

> "An area of bush is chosen — we are called to clear it of small growth. When that is done the large trees are scarfed. (This is winter work). They are felled and left to dry in the sun until the eighth or ninth (month) then they are burnt and left to lie again for a short time. When the fourth comes then they are cut small to make the soil rich. When that job is finished and all the burning has ended, the ashes are raked into heaps by the *ko* and the tubers planted in the middle.
>
> When summer comes weeds grow, they are weeded out and left to be eaten by the sun — the kumara are left to grow again. In the autumn they are harvested.
>
> The garden is left and is covered in regrowth. The next year it is renewed and grows sweet food. For two years it is worked but on the third year is left that is until the fourth, fifth and sixth years. It is left completely and is overgrown with brushwood. It is left for the tribe to work. The places where good fern root grows are kept as a place for digging roi (the best fern)."

This Aupouri account and another very similar one from Maketu which he obtained in 1842 were the basis of Shortland's (1854, pp. 186-188) characterisation of agriculture as follows.

> "At the time of the discovery of New Zealand, its inhabitants were found to have made many of the first steps towards civilisation. They lived in comfortable houses, more or less ornamented with carved work, and with scrolls delineated with red and white colours on the posts and beams which supported them. Their villages were fortified with palisades and trenches, and were surrounded by extensive gardens planted with the sweet potato, the *taro,* and the melon. Their knowledge of the art of horticulture was not inconsiderable; for they even employed the method of forming an artificial soil, by mixing sand with the natural soil, in order to make it light and porous, and so render it more suitable to the growth of the sweet potato. In parts of the Waikato district where this plant was formerly much cultivated, the traveller frequently meets with large excavations, from twenty to thirty feet in depth, like the gravel pits one is accustomed to see in England near public roads; and in reply to his inquiries, he learns with surprise that they were formed by those who resorted there, year after year, to procure sand for manuring the ground in the manner described.
>
> Their intelligence and industry is still further illustrated by their mode of cultivating the common potato. The spots generally selected for the growth of this plant are situated in forest lands, and sometimes in swamps, which have been reclaimed on purpose by draining. Suppose a wood is the spot selected — the first work is to cut down all the small trees and brushwood, after which the larger trees are felled, till a sufficient space has been cleared. This is done in July. The trees and branches are left to lie on the ground till January or February of the year following, at which time, having become dry, they are set on fire. Nothing more is done till the following September, when the larger logs, only partly consumed by the fire, are split up into small pieces, gathered into heaps, and burnt. This work being finished, seed potatoes are brought to the ground and planted one by one in small holes made with a sharp-pointed wooden implement, called a *ko*. During the summer, the weeds which spring up are carefully hoed, but are left to lie on the ground between the young potato plants for the sun to scorch; and in the month of February the crop is fit to be removed from the ground and placed in store.
>
> During the two succeeding years seed potatoes are similarly planted in the same ground with the *ko*. On the fourth year, the ground is for the first time dug up with the spade, and the potatoes are planted in small mounds of earth, three or four seeds in each mound. These mounds are arranged with great regularity in quincunx, and give a

remarkably neat appearance to the garden. The same method is followed in the fifth, sixth and seventh years — a striking instance of the fertility of the soil. The garden is not tilled afterwards, but the residue of the crop left in the ground the year before produces an early crop the eighth year, which is fit to dig in the summer; and for many years the parts on which the fern springs up naturally are resorted to for the purpose of procuring its root, which is much esteemed when growing in such localities."

This system is also that used for the *uwhi* potato as described by Servant in 1842 (Simmons 1973).

Richard Taylor (1855, pp. 377-379) has a similar account but with extra details.

"The New Zealanders have always been an agricultural people; their country not naturally affording the means of subsistence in sufficient abundance to support them, without the cultivation of the soil.

Their ancestors brought the *kumara,* or sweet potatoe — the *taro* — an *arum* — and the *hue,* or calabash, with them from Hawaiki: these were the only vegetables they possessed, and they carefully cultivated them in large quantities, until the arrival of Europeans, who gave them the potatoe, the value of which was so soon discovered, that now it may be said to be their staple article of food. It is far more universally cultivated than the *kumara,* from its taking less labour in planting, and yielding a more certain and larger return. The *kumara* requires not only a warm aspect, but also, in general, an artificial soil; sand or gravel being laid on the ground to the depth of six inches. So also the *taro,* which needs the aid of bush screens and other expedients to make it flourish. These also soon exhaust the soil; three years' cropping with *kumara* being, in general, all that can be obtained from one spot. The place is then abandoned, and another selected; but this abandonment is only for a certain space of time. Instead of turning up the soil, and suffering it to lay in fallow a season, their method of renewing it is to allow it to remain unoccupied until it is covered with a certain growth of wood, if situated in woodland, or of fern, if situated in fern land, which requires a period of from seven to fourteen years, when the spot is again cleared and planted. Thus, many places, which appear never to have been touched by the hand of man, are pointed out as having been the farms of some ancestor, and, when the place is more closely regarded, it will be found destitute of all old timber. The *kumara, taro,* and even potatoe grounds, are generally selected on the sides of hills, having a northern aspect; by this declivity towards the sun, they gain an increased degree of heat.

The *hue* (or gourd) is everywhere raised, and it is, indeed, an excellent vegetable. It bears a white flower, and produces a calabash, which is sometimes of very large dimensions. When young, it is a delicious vegetable, sweet, juicy, and extremely savoury. When ripe, it is of the greatest use, supplying the place of crockery. In it, the New Zealander carries his water, his stores, potted birds, fish or flesh; he also uses it as a dish, and even as a lamp. It is often beautifully ornamented with tattooing. The natives have a very singular idea respecting the *hue,* that the seed can always be procured from the entrails of the sperm whale, which they affirm they have frequently verified. They account for it by saying that in Hawaiki the *hue* grows spontaneously, and hangs over the cliffs in great quantities, which, when ripe, fall into the sea and are devoured by the whales, which frequent that part.

The melon and pumpkin are now also cultivated, as well as the cabbage and turnip, which grow wild, having been introduced by Cook; maize and wheat have been more recently raised, but are now grown in large quantities.

To a stranger, the natural means of support may appear few and insignificant; but, in early times, when wars raged, or unfruitful seasons destroyed the hopes of the *kumara* harvest, the New Zealanders had recourse to the indigenous productions of the land. Almost every spot produces some kind of food, the plains being covered with the *pteris esculentis,* or edible fern; although that which is selected for food only attains a proper size on rich land. The roots chosen for this purpose are found about a foot and a half or two feet deep, and are dug up with a long strong pole, sharpened at one end, with a rest for the foot, called a *ko.* The upper roots are stringy, hard, and harsh to

> the palate; but the lower ones contain more farinaceous matter. When dug up, they are either stacked to dry, on the spot for future use, or eaten fresh. The way of preparing it is to lay it on the embers for a short time, till it is sufficiently roasted; it is then scraped with a shell, to take off the blackened outside, and afterwards beaten with a wooden or stone mallet, to loosen the fibres. The natives sometimes pound it into masses, pulling out the fibres, and putting it into calabashes, containing the juice of the *tupahiki*. It is eaten immediately it is cooked, and is by no means unpalatable; neither is it an astringent, as is generally supposed, but rather the contrary. Even to the present day, it is an article much prized, especially by the sick, who often prefer it to other food; and it is always taken by persons going on a voyage, as the best antidote for sea-sickness."

In the manuscript of Aperahama Taonui of Omanaia, Hokianga, written in 1849, there is mention of soil quality. A young man came from Tamaki (Auckland) to the Puketona district near Kaikohe. He had decided to return home but went out on a kiwi hunting expedition. To quote from a translation (Simmons 1975, p. 67, Taonui MS. pp. 16, 17).

> "When he saw Taiamai, he saw the beauty of the soil and said: "The soil of this village is very like mine at Tamaki". He pressed it in his hand and the soil stuck to his hand. Then he took some of that earth on his back to be seen by the woman; . . . So we claim Taiamai, seen by our ancestor, he who cleared it."

There are a number of distinct words in Maori for the different types of soil. Best (1925, p. 19), for example, lists thirty-five such names.

A child's game recorded by Shortland (1854, pp. 159-160) emphasises the relative values of the gathered and cultivated foods.

> "What is your husband?"
> "My husband is a grower of kumara".
> "Go to a land where the soil is rich".
> "What is your husband?"
> "My husband is a fisherman".
> "Go to a place where the sea is calm".
> "What is your husband?"
> "My husband is a digger of fern root".
> "That's better. You have the putting into store and taking out again".

There are many karakia associated with kumara, some of which are said to be important because tribes not using them lost their kumara or put kumara and fern root together. There are also traditions on the East Coast and in the Bay of Plenty of canoes being sent back to Hawaiki to obtain kumara for people who did not have them. Even in the north some tribes are said to have had kumara while others either did not cultivate kumara at all or had lost it. The movement of Ngati Whatua from the North Cape (Tuhaere MS.) is said to have been because Ngati Mateika to the south of them had no kumara and raided Ngati Whatua to get supplies. Ngati Whatua retaliated and took over the North Hokianga and eventually Auckland.

Perhaps a lot of the wars mentioned in tradition can be understood in terms of the proverbial saying:—

> "When kumara are being planted, one hundred will help.
> When kumara are being put in rua, two hundred will help."

DISCUSSION

The early contact reports relating to the summer period record two major food getting activities being practised concurrently as part of the total cycle of subsistence activity. One is the planting of the kumara and other crops, the other is the exploitation of certain resources — fern root and fish — for daily food, excess amounts of which are prepared for storage. There are marked local differences in the techniques employed and in the amount of movement required by the group, but the overall pattern is similar.

The later reports of the methods of preparing the ground and growing crops again exhibit an overall similarity, though there are local variations in the techniques employed. The Aupouri account gives a definite timetable for ground preparation as well as the use of the ground, after cultivation was ended, for fern root. In this respect the fern, while a naturally occurring plant, is actually semi-cultivated. The children's song quoted gives pride of place to a digger of fern root and this reflects the importance of fern root as the major staple food despite the ritual and social importance given to kumara.

Shortland's and Taylor's accounts emphasise the shifting nature of the cultivations, the methods employed, and the cycle of activities. While recorded in the 19th Century, it is more than probable that the overall pattern exhibited by these accounts is not very different from prehistoric practice. The repertoire of techniques available for producing garden areas was common to all Maori agriculturalists and allowed for the nature of the soil and vegetation (Simmons 1975, p. 208). The desirability of the rich volcanic soils of Taiamai and Tamaki, the marginal nature of kumara growing and the need for all the warmth possible in more southern areas, these and other factors influenced the particular use of any of these techniques in the local situation but did not radically alter the general cycle of garden preparation, planting and harvesting. The associated activities of fern collecting and fishing in the summer were complemented by forest collecting and birding in the autumn when forest products and fruit were available (Colenso, 1881; Simmons 1969, Fig. 2). At the same time the first steps were being taken to prepare new gardens.

CONCLUSION

Maori agricultural practices consisted of two broad activities, one associated with the preparation and planting of new gardens, the other with the exploitation of already existing gardens. During the year these two activities inermeshed to produce a single cycle, while the full agricultural cycle itself took a minimum of three years to complete. If the full cycle is considered to mean the renewal of agricultural activity on a particular plot after a period of fallow, then the period is much longer yet, and varies from place to place depending on the quality of the soil.

REFERENCES

BEAGLEHOLE, J. C. (Editor)

1962 *The Endeavour journal of Sir Joseph Banks 1768-1771* Vols. 1, 2. Angus and Robertson, Sydney.

1968 *The voyage of the Endeavour 1768-1771*, 2nd Ed. Vol. 1 of The Journals of Captain James Cook on His Voyages of Discovery. Hakluyt Soc. Works, Extra Series XXXIV. Cambridge University Press.

BEST, Elsdon

1925 Maori agriculture. *Dominion Mus. Bull.* 9: 1-172.

1929 Fishing methods and devices of the Maori. *Dominion Mus. Bull.* 12: 1-230.

COLENSO, William

1881 On the vegetable food of the ancient New Zealanders before Cook's visit. *Trans. Proc. N.Z. Inst.* 13: 3-38.

DEBENHAM, Frank (Editor)

1945 *The voyage of Captain Bellingshausen to the Antarctic Seas 1819-1821.* Hakluyt Soc. 2nd Series No. XCI. 2 vols. London.

HAMILTON, Augustus

1908 Fishing and sea-foods of the ancient Maori. *Dominion Mus. Bull.* 2: 1-73.

SHORTLAND, Edward

MS. He korero mo te kumara. MS. 86, Hocken Library, Dunedin.

1854 *Traditions and superstitions of the New Zealanders.* Longman, Brown, Green & Longman, London.

SIMMONS, David

1969 Economic change in New Zealand Prehistory. *J. Polynes. Soc.* 78: 3-34.

1975 Settlement of the Maori in New Zealand. *In* James Siers and Jim Henderson *The New Zealanders.* Millwood Press, Wellington, pp. 205-214 (a revised and shortened version of a paper presented at the I.C.A.E S. Chicago 1973).

SIMMONS, D. R. (Editor)

1973 *Father C. Servant. Habits and customs of the New Zealanders 1838-42.* A. H. & A. W. Reed, Wellington.

1975 The Taonui manuscript. *Rec. Auckland Inst. Mus.* 12: 57-82.

TAYLOR, Richard

1855 *Te Ika a Maui.* Wertheim and Macintosh, London.

THOMSON, Arthur

1859 *The story of New Zealand* Vol. 1. John Murray, London.

TUHAERE, Paora

MS. He whakapapa tupuna. MS. 120, Auckland Institute and Museum, Auckland.

WHITE, John

1888 *The ancient history of the Maori* Vol. 5. Government Printer, Wellington.